CLAIMS

1. An apparatus for rate selection in wireless communications, comprising:
means for determining an open loop prediction of signal to noise and interference ratio;
means for determining a closed loop correction, comprising:
means for determining a quality of a received packet; and
means for decreasing the closed loop correction if the quality is bad; and
means for selecting a data rate in accordance with the open loop prediction and the closed loop correction,
wherein the means for decreasing the closed loop correction comprises means for computing an updated value of an outer loop correction in accordance with an equation:

$$L_{new} = \max(L_{old} - \delta, L_{\min}),$$

wherein L_{new} is the updated value of the outer loop correction, L_{old} is a previous value of the outer loop correction, δ is a step size, and L_{min} is the minimum value that the outer loop correction can attain.

2. The apparatus of claim 1, wherein the means for determining a closed loop correction further comprises:
means for determining a quality of a received packet; and
means for increasing the closed loop correction if the quality is good.

3. The apparatus of claim 2, wherein the means for increasing the closed loop correction comprises:
means for determining a mode of operation; and
means for increasing the closed loop correction in accordance with the mode of operation.

4. An apparatus for rate selection in wireless communications, comprising:
means for determining an open loop prediction of signal to noise and interference ratio;
means for determining a closed loop correction, comprising:
means for determining a quality of a received packet; and

means for increasing the closed loop correction if the quality is good, comprising:

means for determining a mode of operation, comprising:

means for determining a time fraction for which the packet is received; and

means for selecting the mode of operation in accordance with the time fraction; and

means for increasing the closed loop correction in accordance with the mode of operation; and

means for selecting a data rate in accordance with the open loop prediction and the closed loop correction.

5. The apparatus of claim 4, wherein the means for determining a time fraction comprises means for computing an updated value of the time fraction when the packet is detected in accordance with an equation:

$$AF_{New} = (1-f) \cdot AF_{Old} + f$$

wherein $\boldsymbol{AF_{new}}$ is the updated value of the time fraction, $\boldsymbol{AF_{old}}$ is a previous value of the time fraction, and $f \in (0,1)$ is a parameter controlling a rate of change of the time fraction.

6. The apparatus of claim 4, wherein the means for determining a time fraction comprises means for computing an updated value of the time fraction when the packet fails to be detected in accordance with an equation:

$$AF_{New} = (1-f) \cdot AF_{Old},$$

wherein $\boldsymbol{AF_{new}}$ is the updated value of the time fraction, $\boldsymbol{AF_{old}}$ is a previous value of the time fraction, and $f \in (0,1)$ is a parameter controlling a rate of change of the time fraction.

7. The apparatus of claim 4, wherein the means for selecting the mode of operation comprises means for selecting a fast attack mode if all of the following conditions are satisfied:

$L < L_{AMThreshold}$,
$AF < AF_{Idle}$, and
the two most recently received packets are good,

wherein $L_{AMThreshold}$ is a threshold controlling a transition to the fast attack mode with respect to L and AF_{Idle} is a threshold controlling a transition to the fast attack mode with respect to AF.

8. The apparatus of claim 7, wherein the means for increasing the closed loop correction in accordance with the mode of operation comprises means for computing an updated value of an outer loop correction in accordance with an equation:

$$L_{new} = \min(L_{old} + \delta', L_{\max}),$$

wherein L_{new} is the updated value of the outer loop correction, L_{old} is a previous value of the outer loop correction, δ' is a step size, and L_{max} is the maximum value that the outer loop correction can attain.

9. The apparatus of claim 4, wherein the means for selecting the mode of operation comprises means for selecting a normal mode if any of the following conditions are satisfied:

$L \geq L_{NMThreshold}$,
$AF \geq AF_{Busy}$, or
the most recently received packet is bad,

wherein $L_{NMThreshold}$ is a threshold controlling a transition to the normal mode with respect to L and AF_{Busy} is a threshold controlling a transition to the normal mode with respect to AF.

10. The apparatus of claim 9, wherein the means for increasing the closed loop correction in accordance with the mode of operation comprises means for computing an updated value of an outer loop correction in accordance with an equation:

$$L_{new} = \min(L_{old} + TARGET\_PER \cdot \delta, L_{\max}),$$

wherein L_{new} is the updated value of the outer loop correction, L_{old} is a previous value of the outer loop correction, *TARGET_PER* is a packet error rate to be attained, δ is a step size, and L_{max} is the maximum value that the outer loop correction can attain.

11. An apparatus for rate selection in wireless communications, comprising:

means for determining an open loop prediction of signal to noise and interference ratio;

means for determining a closed loop correction; and

means for selecting a data rate in accordance with the open loop prediction and the closed loop correction, comprising:

means for summing the open loop prediction of signal to noise and interference ratio and the closed loop correction; and

means for selecting the data rate as the highest data rate, a signal to noise ratio of which is below the summed signal to noise ratio.